

Assignment 1

CPS 566 – Image Processing

Released Date: 05-31-2022

Requirements

In this assignment, you will implement to solve two (2) basic problems in image processing.

Problem 1

Write a Matlab function that takes in two gray scale images and performs **histogram matching**.

You will only have to use histograms to bring about this change and no other properties.

The result image should also be saved in a separate file.

Please also display the histograms of these images for reference.



Source Image



Template Image



Result Image

Note that you are not allowed to use any existing MATLAB functions such as **imhistmatch**, **imhistmatchn**, among others. You have to write the MATLAB function from scratch.

Problem 2

Write a MATLAB script which reads, converts a color image into grayscale image, and performs median filter and adaptive filter. You are not allowed to use any existing functions such as **medfilt2**, **ordfilt2**, **wiener2**. Note that the neighboring region can be changed, e.g., 3x3, 5x5, or 7x7. Please discuss/elaborate on each filtering method (median and adaptive filters).

What to Submit

1. A well-documented program that implements all problems in the Assignment 1. You must submit your program source code.
2. A well-written, concise project report. It should include: (a) title and names of group members; (b) the analysis of each problem; (c) the issues during the implementation; (d) the solutions to overcome the issues in (c); (e) the contribution of each individual member; and (f) the powerpoint slides (maximum 10 slides) used in the Assignment grading.

For each group, you must submit the files above in a single zipped folder named after your student IDs. Your group will be required to do a presentation.

Submission Due: 11:55pm, 06-15-2022

Note: Cheating or plagiarism in any form is considered a serious violation of expected student behavior and will result in disciplinary action.